



FACCE-MACSUR

D-C0.3: Report about the strategy for future research in crop modelling for assessing the risks of climate change on food security

Crop modelling for integrated assessment of risk to food production from climate change

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Abstract/Executive summary

The complexity of risks posed by climate change and possible adaptations for crop production has called for integrated assessment and modelling (IAM) approaches linking biophysical and economic models. This paper attempts to provide an overview of the present state of crop modelling to assess climate change risks to food production and to which extent crop models comply with IAM demands. Considerable progress has been made in modelling effects of climate variables, where crop models best satisfy IAM demands. Demands are partly satisfied for simulating commonly required assessment variables. However, progress on the number of simulated crops, uncertainty propagation related to model parameters and structure, adaptations and scaling are less advanced and lagging behind IAM demands. The limitations are considered substantial and apply to a different extent to all crop models. Overcoming these limitations will require joint efforts, and consideration of novel modelling approaches.

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Introduction

Risks to food production from climate change

Framing integrated assessment for modelling climate change risk to food production

Crop model application for climate change impact assessment

Requirements of IAM for crop modelling

Conclusion

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